CLAIM(S)

1. Process for the generation of ultraviolet radiation from a microwave source and an electrodeless tube (*9*) placed in a cavity (*8*) excited by means of a microwave generator (*1*) and resonated at an appropriate mode, characterized in that it consists in orienting the polarized stationary electric field (*E*) of constant amplitude parallel to the axis of the discharge tube (*9*) and overdimensioning the cavity so that this tube has its longitudinal dimension along a resonance antinode of the mode excited in the cavity.

2. Device for implementing the process according to Claim 1, characterized in that it has a resonant cavity (*8*), at least one microwave emitter (*1*) feeding into this cavity, a means of coupling (*7*) between the cavity and the emitter, a device (*11*) for adjusting the frequency tuning of the cavity, and a long electrodeless tube (*9*) containing a gas at a given pressure, placed in the cavity along the direction of the electric field (*E*) component for the excited mode, whereby the cavity (*8*) is overdimensioned so that said component has a resonance antinode along the length of the tube.

3. Device according to Claim 2, characterized in that the cavity (*8*) is prismatic and has a rectangular cross section to allow the excitation of the TE012 mode of the hyperfrequency radiation, whereby the tube (*9*) is placed along the zero-order direction of the mode.

4. Device according to Claim 2, characterized in that the cavity (*8*) is cylindrical with a partially elliptical cross section, where by the tube (*9*) is placed along one of the foci of the cavity.

5. Device according to Claim 4, characterized in that the cavity (*8*) has a polished reflecting wall (*19*) making it possible to focus the ultraviolet radiation emitted by the tube (*9*) at the other focus of the cavity, excited on

the TM010 mode of the hyperfrequency radiation.

6. Device according to any of Claims 2-5, characterized in that the cavity (*8*) has an open side (*13*) parallel to the tube (*9*) and consisting of a fine mesh (*14*) transparent to the ultraviolet radiation emitted by the tube and opaque to the hyperfrequency radiation.

7. Device according to Claim 2, characterized in that it has two microwave emitters of identical or very similar frequency, whereby the frequency difference is less than the passband of the resonant cavity (*8*), so that the effects of each emitter are additive.

8. Device according to any of Claims 2-7, characterized in that the frequency of the microwave radiation is 2,450 MHz, whereby the tube mounted in the cavity has a length of at least 20 cm.

9. Device according to any of Claims 2-8, characterized in that the microwave emitter or emitters have variable power and excite the resonant cavity (*8*) by means of an insulator (*2*) which absorbs the wave reflected by the cavity and protects the emitter or emitters.

10. Device according to Claim 9, characterized in that the wave reflected by the resonant cavity (*8*) during the transitory excitation conditions is absorbed by a water load (*6*).

11. Application of the process according to Claim 1 to the treatment of materials in motion relative to the ultraviolet radiation produced.